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# SEVENTY-FIFTH MEETING

OF

# The Electrochemical Society, Inc.

COLUMBUS, OHIO

April 26, 27, 28, 29, 1939

## LOCAL COMMITTEE

**General Chairman**
James R. Withrow

**Vice-Chairman**
Joseph H. Koffolt

**Budget and Finance**
Dana J. Demorest, Chairman
Clyde E. Williams — E. W. Campion

**Industrial Trips**
C. L. Faust, Chairman
Wesley G. France — Dimitry Niconoff
Oscar E. Harder — Ross C. Purdy
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Chas. R. Owens — J. D. Sullivan

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L. Kermit Herndon, Chairman
W. A. Welcker, Jr. — James O. Pence

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C. R. Austin, Chairman
Joseph H. Koffolt

**Entertainment**
A. E. Pavlish, Chairman
Carl D. McGuire — C. L. Faust
C. R. Austin — F. W. Fink
H. P. Simons

**Registration and Hotels**
James O. Pence, Chairman
J. D. Sullivan — C. A. Rohrman
Harlan Depew

## Ladies' Entertainment Committee

Mrs. Clyde E. Williams, Chairman
Mrs. C. E. MacQuigg — Mrs. G. A. Bole
Mrs. J. R. Withrow — Mrs. A. E. Pavlish
Mrs. C. L. Faust — Mrs. J. H. Koffolt
Mrs. C. R. Austin — Mrs. W. C. Ebaugh
Mrs. H. W. Gillett — Mrs. H. A. Pray
Mrs. J. D. Sullivan — Mrs. F. W. Fink

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# Seventy-fifth Meeting

## GENERAL INFORMATION

### Hotel Information

**Headquarters** will be at the **Hotel Deshler-Wallick. The Registration Desk** will be in the assembly hall. It is recommended that members write at once for room reservations. The rates at the Hotel Deshler-Wallick are $2.50 to $7.00 (per day, single rooms) and $4.50 to $10.00 (per day, double rooms, double bed) and $5.00 to $10.00 (per day, double rooms, twin beds). Suites may be had for $8.00 to $24.00 per day, according to size and location. For other hotels see last page.

Registration will begin at 7:30 p.m. in the Hotel Deshler-Wallick, assembly hall, on Wednesday, April 26th. The registrar will receive arriving members and guests, distribute badges and programs, and give detailed information.

Guests should be introduced by members, and when registered, they may attend the sessions and receive such other courtesies as may be extended to them by the Local Committee or by the Officers of the Society. Local members of the American Ceramic Society and of other scientific societies are invited to register as guests without introduction.

The registration fee is $2.00 per member or guest registering. The ladies do not pay a registration fee. Everyone expecting to attend the scientific-technical sessions must register. The low registration fee is made possible by the co-operation of the Local Committee and industries in Columbus and vicinity.

## Places of Meetings

The scientific and technical sessions will be held in the Ball Room of the Hotel Deshler-Wallick. Luncheons will be served in the Hall of Mirrors of the Hotel. On Friday evening the reception to the newly elected President will be held in the Foyer of the Ball Room. The dinner-dance will be held in the Ball Room.

## Thursday Evening

On Thursday evening, April 27th, **Mr. John H. Thomas,** Manager of the Research Laboratories of the Owens-Corning Fiberglas Corporation will address the members and guests in the Ball Room of the Hotel Deshler-Wallick at 7:30 p.m. The topic of his talk will be, **"The Production of Fiberglas and Glass Diaphragms."** Mr. Thomas will illustrate his talk with numerous slides and samples. No one can afford to miss this fascinating lecture.

## Friday Evening

At 7:00 p.m. Friday evening, a reception will be held in the Ball Room in honor of the newly elected President of the Society. Following the reception, dinner will be served. Immediately following the dinner **President Robert L. Baldwin,** will deliver his Presidential address on, **"Contributions of the Electric Furnace to Modern Welfare."** The award of Young Author's Prize and the 1939-1940 Weston Fellowship, also the Report of the Acheson Medal Committee will be made directly following President Baldwin's talk. There will be dancing until 1 a.m.

## Industrial Trips

Thursday and Friday afternoons will be devoted to the inspection of local plants and laboratories of interest to electrochemists. On **Thursday afternoon,** at 1:30 p.m. sharp, buses will leave the Hotel Deshler-Wallick, taking members and guests to the **Battelle Memorial Institute,** where they will witness the actual operation of various equipment in the laboratory. Mr. Clyde E. Williams is the Director of the Institute. From Battelle, the group will proceed to the Ohio State University to the Chemical Engineering Laboratories and the Engineering Experiment Station. From the University, the group will proceed to the Orton Memorial Foundation where pyrometric cones are manufactured.

On **Friday afternoon,** at 1:30 p.m. sharp, buses will leave the Hotel Deshler-Wallick to take the members and guests to the Owens-Corning Fiberglas Corp. at Newark, Ohio. Here visitors will observe the spinning and weaving of glass fiber, besides many other interesting processes of an industry only a few years old.

The ladies are invited to join the men in all of the plant trips. There will be a small charge for transportation of members and guests on the plant inspection trips.

Taxis will be available for visits to: (1) Port Columbus or (2) Columbus Gallery of Fine Arts or (3) Columbus Golf Course or (4) Sight Seeing Tour.

In addition to the above-mentioned trips, arrangements can be made, at the Registration Desk, for visits to the following plants:

D. L. Auld Co.
Capital City Products Co.
M. & R. Dietetics Laboratories
Columbus Water Purification Plant
Columbus Sewage Disposal Plant
Buckeye Steel Castings Co.
Jeffrey Manufacturing Co.

## Golf and Tennis

Those wishing to play golf will advise Mr. Carl D. McGuire through the Registration Desk, where guest cards may be obtained for the Columbus Golf Clubs. For arrangements to play tennis, leave word at the Registration Desk.

## Admission to Sessions and Social Functions

Tickets must be obtained at Registration Desk for all scheduled meals and other functions. The Society badge, received upon registration, is absolutely essential for admission to the technical and scientific sessions.

Buses will be available for plant trips and sightseeing only to those registrants holding proper tickets.

## Cost of Functions

### Men

| | |
|---|---|
| Registration | $2.00 |
| Thursday Luncheon | 1.25 |
| Transportation to Battelle Memorial Inst., Orton Inst., and the Ohio State University | 1.50 |
| Friday Luncheon | 1.25 |
| Plant, transportation to Newark, Ohio | 1.50 |
| Dinner-dance Friday night | 1.75 |
| Saturday Luncheon | 1.25 |
| Total | $10.50 |

## Cost of Functions

### Ladies

| | |
|---|---|
| Registration | Complimentary |
| Thursday morning sightseeing | Complimentary |
| Thursday luncheon, Scioto Country Club | $1.25 |
| Thursday trip to Battelle and Archeological Museum | Complimentary |
| Friday trip to American Ceramic Society | Complimentary |
| Friday luncheon at Granville Inn | 1.25 |
| Friday trip to Newark, Ohio | 1.00 |
| Friday evening, dinner-dance | 1.75 |
| Saturday transportation to Faculty Club | Complimentary |
| Saturday luncheon at Faculty Club | 1.25 |
| Total | $6.50 |

The charges for luncheons and the dinner include tips.

Extra tickets for the dinner-dance, luncheons and other social features may be obtained at the Registration Desk.

## LADIES' PROGRAM

### Wednesday, April 26, 1939

**7:30-9:00** p.m. Registration, Assembly Hall, Hotel Deshler-Wallick.

### Thursday, April 27, 1939

**9:30 a.m.** The ladies will leave the Hotel Deshler-Wallick by bus, to visit the Columbus Art Gallery, after which the group will drive out through Arlington, Ohio, and along the Scioto river road to visit the Orchid Farm.

**12:00 noon.** Luncheon at the Scioto Country Club. ($1.25 including tip.)

**1:30 p.m.** Buses leave Scioto Country Club for trip to Battelle Memorial Institute. After the plant visit the ladies will visit Ohio State Archeological Museum.

**6:00 p.m.** Informal group dinners.

**7:30 p.m.** Illustrated lecture by John H. Thomas on Glass Evening Gowns, Hotel Deshler-Wallick.

## Friday, April 28, 1939

**9:30 a.m.** The ladies will leave by taxi to go to the Headquarters of the American Ceramic Society where they will hear a lecture on ceramics, by Mr. Ross C. Purdy and see colored movies on the making of pottery, by Prof. A. E. Baggs. After this, at 11:00 a.m. sharp the ladies will leave by bus for the trip to Granville, Ohio.

**12:00 noon.** Luncheon, Granville Inn. ($1.25 including tip.)

**1:30 p.m.** The ladies will proceed to Newark, Ohio, where they will join the men at the Owens-Corning Fiberglas Corp. for inspection of the plant. Here they will witness the preparation, spinning and weaving of fiber glass.

**7:00 p.m.** Reception to the newly elected President of the Society.

**7:30 p.m.** Dinner-dance in the Ball Room of the Hotel Deshler-Wallick. ($1.75 including tip.) Dancing from 9:00 p.m. to 1:00 a.m.

## Saturday, April 29, 1939

**9:00 a.m.** This morning has been left free for the ladies to go shopping if they like.

**11:30 a.m.** Leave Deshler-Wallick Hotel by taxi to go to the Faculty Club.

**12:00 noon.** Luncheon and bridge at the Faculty Club. ($1.25, including tip.)

**5:30 p.m.** Adjournment.

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## Acknowledgment

The Board of Directors of the Electrochemical Society gratefully acknowledges the kind cooperation and generous assistance of the friends of the Society in Columbus who have been largely responsible for this interesting and unusually enjoyable program.

## Note to Authors of Papers

In the presentation of your paper, please state briefly: (1) the purpose of your investigation; (2) the method pursued; (3) the important results obtained; and (4) your conclusions based on your findings. A blackboard and a projection lantern will be provided. Slides are always welcomed by the audience. Curves are always more convincing than tabulations. Samples of new products should be relatively small so as to facilitate passing them among the audience.

## The Columbus Volume

The inclusion of the title of a paper in this program does not necessarily imply publication of that paper in the "Columbus Volume" of the Electrochemical Society's Transactions.

## Typewritten Discussion

Members wishing to present written discussion on any of the papers listed in this program will please submit three copies of each to Dr. Colin G. Fink, Secretary of the Society, whose office is at Columbia University, New York City.

## DETAILED PROGRAM

### Wednesday, April 26, 1939

**7:30-9:00 p.m.** Registration at the Hotel Deshler-Wallick, Assembly Hall.

NOTE: Local members and local guests are requested to register as early as possible.

**8:30 p.m.** Meeting of the Board of Directors, followed by the Annual Meeting of the Society. Hotel Deshler-Wallick. All members are urged to attend this annual meeting; Agenda: Reports on Finance, Membership, Scientific and Technical Advances, Report of Tellers of Election, Reports of various Committees.

### Thursday, April 27, 1939

**8:00 a.m.** Group Breakfast of the Theoretical Division Members. Informal get-together, Dr. Arthur E. Lorch in charge. Hotel Deshler-Wallick.

**8:00 a.m.** Registration continued, Assembly Hall, Hotel Deshler-Wallick.

## Thursday—Continued

**9:00 a.m.** Scientific-Technical Session on **"Refractories in the Electrochemical Industry,"** Mr. L. J. Trostel, General Refractories Co., presiding. Ball Room.

(28) "Physico-Chemical Control of Properties of Clays," by John D. Sullivan, Chief Chemist, Battelle Memorial Institute, Columbus, Ohio.

(25) "Refractories of the Alumina-Silica Series," by Fred A. Harvey, Director of Research, Harbison-Walker Refractories Co., Pittsburgh, Pa.

(26) "The Relation of Low Weight to the Physical Properties of Furnace Refractories," by C. L. Norton, Jr., Technical Director, The Babcock & Wilcox Co., Barberton, Ohio.

(24) "Stoneware in the Electrochemical Field," by Percy C. Kingsbury, Chief Engineer, General Ceramics Co., New York City.

Singer (X) "Carbon as a Refractory," by Felix Singer, England. (Courtesy "Metals and Alloys" in which this paper is published in full in the April number.)

Heise (12) "Porous Carbon Electrodes," by G. W. Heise, National Carbon Co., Res. Labs., Cleveland, Ohio.

Stevens (19) "Electric Carbonization of Coal," by H. Stevens, Cincinnati, Ohio.

**12:00 noon.** Luncheon in charge of the **Theoretical Electrochemistry Division,** Malcolm Dole, Chairman, and A. E. Lorch, Secretary-Treasurer. Tickets at Registration Desk, $1.25 which includes tip. Luncheon talk on "Theoretical Electrochemistry of Gases," by Dr. George Glockler, University of Minnesota, Minneapolis, Minn.

**1:30 p.m.** Leave promptly for visit to Battelle Memorial Institute. A wide variety of investigations are

in progress: Electric Furnaces, Metallographic Studies, Corrosion Tests, etc. From Battelle the group will proceed to the Chemical Engineering Laboratories and Experimental Station at Ohio State University and thence to the Orton Memorial Institute.

**6:00 p.m.** Informal dinner parties. Leave your name at Registration Desk if you wish to join any particular group.

**8:00 p.m.** General Meeting open to the public. Illustrated address by Mr. John H. Thomas, Manager of the Research Laboratories of the Owens-Corning Fiberglas Corporation, on **"The Production of Fiberglas and Glass Diaphragms."**

**Friday, April 28, 1939**

**8:00 a.m.** Group Breakfast of the Electrodeposition Division Members. Informal get-together. Dr. K. G. Soderberg in charge. Hotel Deshler-Wallick.

**8:30 a.m.** Registration continued in Assembly Hall.

## Friday—Continued

**9:00 a.m.** Scientific-Technical Session. Electrodeposition Division in charge. Professor E. M. Baker, University of Michigan, presiding. **"Electroplating and Electrolytic Cells."**

(18) "Electrodeposition of Silver-Lead Alloys for Bearings," by C. L. Faust and Beaumont Thomas, Battelle Memorial Institute, Columbus, Ohio.

(5) "Plating on Aluminum," by W. J. Travers, Krome-Alume Inc., Lockport, N. Y.

(16) "The Electrodeposition of Nickel from Nickel Chloride Solutions," by W. A. Wesley and J. W. Carey, International Nickel Co., Res. Labs., Bayonne, N. J.

(22) "The Comportment of the Palladium-Hydrogen System Toward Alternating Electric Current," by George A. Moore, Princeton University, Princeton, N. J.

(27) "Electrolytic Manufacture of Perchloric Acid from Sodium Chlorate," by Kenneth C. Newnam and F. C. Mathers, Tri-State College, Angola, Ind., and Indiana University, Bloomington, Ind., respectively.

(21) "The Mechanism of the Reaction of the Lead Storage Cell," by M. deKay Thompson, Massachusetts Institute of Technology, Cambridge, Mass.

(3 ) "Hydration of the Anion $SO_4''$ Derived from the Electrolytic Water Transport," by J. Baborovsky, Brno, Czechoslovakia.

**12:00 noon.** Luncheon, Hotel Deshler-Wallick in charge of Electrodeposition Division, Professor E. M. Baker, Chairman and K. G. Soderberg, Secretary-Treasurer. Tickets at Registration Desk $1.25 each (includes tip).

**1:30 p.m.** Buses leave Hotel Deshler-Wallick promptly for trip to Owens-Corning Fiberglas Corp., at Newark, Ohio.

## Friday—Continued

**7:00 p.m.** Reception to newly elected President of the Society, Ball Room Foyer, Hotel Deshler-Wallick.

**7:30 p.m.** Annual Dinner ($1.75, including tip). Ball Room. Presidential Address, Award of honors and prizes. At 10 p.m., Dancing in the Ball Room until 1 a.m., to the music of Floyd Flanders' orchestra.

## Saturday, April 29, 1939

**8:00 a.m.** Group Breakfast of the Electro-Organic Members. Informal get-together. Sherlock Swann, Jr., in charge. Hotel Deshler-Wallick.

**8:30 a.m.** Registration continued in Assembly Hall, Hotel Deshler-Wallick.

**9:00 a.m. Symposium on Electro Organic Chemistry.** Professor Sherlock Swann, Jr., of University of Illinois, Urbana, Ill., presiding.

## Saturday—Continued

( 8 ) "The Electrochemical Reduction of Sugars," by H. Jermain Creighton, Swarthmore College, Swarthmore, Pa.

( 9 ) "Electrochemical Experiments with Various Organic Acids," by Fr. Fichter, Basel, Switzerland.

(14) "The Mechanism of the Kolbe Electrosynthesis and Allied Reactions," by S. Glasstone and A. Hickling, Sheffield, England, and Leicester, England, respectively.

(17) "Analogies Between Electrolytic and Chemical Methods of Reduction. Experiments with Sorbic Acid. Remarks on Mechanism," by C. L. Wilson, University of London, London, England.

(20) "Electrochemical Reduction of Furfural," by Alexander Löwy and W. C. Albert, University of Pittsburgh, Pittsburgh, Pa.

( 4 ) "The Electrolyte Formation of Azo Dyes," by C. J. Brockman and J. W. Griffin, Jr., University of Georgia, Athens, Ga.

(7) "The Electrolytic Preparation of 5, 7, Di-Iodo-8-Quinolinol," by O. W. Brown and Bernard Berkowitz, Indiana University, Bloomington, Ind.

(10) "The Electrolytic Preparation of 2, 4-Dinitrobenzoic Acid from 2, 4-Dinitrotoluene," by O. W. Brown and A. E. Brown, Indiana University, Bloomington, Ind.

(13) "The Electrochemical Reduction in Acid Solution of Para-Nitrophenetole," by W. E. Bradt and A. W. Erickson, University of Maine, Orono, Me., and State College of Washington, Pullman, Wash., respectively.

(11) "The Electrolytic Reduction of Benzoic Acid to Benzyle Alcohol," by Sherlock Swann, Jr., and G. D. Lucker, University of Illinois, Urbana, Ill.

**12:00 noon.** Luncheon, Hotel Deshler-Wallick, in charge of Electronic Division. Luncheon speaker, Dr. J. W. Marden on "The New Fluor-

escent Lamps," profusely illustrated. Tickets at Registration Desk $1.25 each (includes tip).

**2:30 p.m.** Scientific-Technical Session **"The Corrosion of Alloys."** Dr. F. R. Morral of Purdue University, presiding.

( 6 ) "Anodic Solution of Alloys," by F. R. Morral and J. L. Bray, Purdue University, Lafayette, Ind.

( 2 ) "The Dezincification of Alpha Brass with Special Reference to Arsenic," by F. W. Fink, Battelle Memorial Institute, Columbus, Ohio.

(23) "Relations Between Crystal Structure and Corrosion," by Gerhard Derge, Carnegie Institute of Technology, Pittsburgh, Pa.

( 1 ) "The Binary Alloys of Indium and Tin," by Colin G. Fink, E. R. Jette, S. Katz and F. J. Schnettler, Columbia University, New York City.

(15) "Amalgam Activities and Standard Electrode Potentials, II. Lead," by M. M. Haring, M. R. Hatfield, P. P. Zapponi, Univer-

sity of Maryland, College Pk., Md., National Carbon Co., Cleveland, Ohio, and Warner Institute, New York City, respectively.

**5:30 p.m.** Adjournment.

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## FALL MEETING

at the

**Hotel Commodore**

**New York City**

September 11, 12 and 13, 1939

**Two General Sessions**

Corrosion and the Effect of Cathode Reactions

New Methods in Electro-Analysis

MONDAY, SEPTEMBER 11, IS

"Electrochemical Day"

at the

New York World's Fair

Manuscripts for the Fall Meeting are due at the Secretary's Office **not later than June 15, 1939**

James A. Lee, Chairman
New York Meeting

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## Hotels Located Near Headquarters

### (Hotel Deshler-Wallick)

| | Per Day | |
|---|---|---|
| | Single | Double |
| Fort Hayes Hotel— | $2.00 up | $3.50 up |
| Hotel Neil House— | $3.00 up | $4.50 up |

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C. W
J. P.

## LOCAL SECTIONS OF THE SOCIETY

### *Philadelphia Section*

J. L. Crenshaw, Chairman, Bryn Mawr, Pa.
Milton B. Barba, Vice-Chairman, Philadelphia, Pa.
Harold J. Read, Secretary, Philadelphia, Pa.
Walter B. Keighton, Jr., Treasurer, Swarthmore, Pa.

### *New York Section*

Charles A. Marlies, Chairman, New York City.
Ralph H. Müller, Vice-Chairman, New York City.
Raymond R. Rogers, Secy.-Treas., New York City.

### *Niagara Falls Section*

L. G. Patterson, Chairman, Niagara Falls, N. Y.
W. Cecil Gardiner, Secy.-Treas., Niagara Falls, N. Y.

### *San Francisco Section*

W. Hirschkind, Chairman, San Francisco, Calif.
P. C. Haeseler, Secy.-Treas., San Francisco, Calif.

### *Chicago Section*

J. D. Parent, Chairman, Chicago, Ill.
Arthur Schroder, Vice-Chairman, Winnetka, Ill.
L. G. Van de Bogart, Secretary, Chicago, Ill.
E. A. Sprogis, Treasurer, Maywood, Ill.

### *Michigan Section Organization Committee*

E. M. Baker, Ann Arbor, Mich.
H. D. McLoose, Detroit, Mich.
Carl E. Heussner, Birmingham, Mich.

### *Cleveland Section*

R. S. Mackie, Chairman, Cleveland, Ohio.
A. C. Zachlin, Vice-Chairman, Cleveland, Ohio.
C. E. Heil, Secretary-Treasurer, Cleveland, Ohio.

### *Pittsburgh Section*

C. W. Borgmann, Chairman, Pittsburgh, Pa.
J. P. Fugassi, Secretary-Treasurer, Pittsburgh, Pa.

## OFFICERS OF THE SOCIETY

**President**

Robert L. Baldwin, National Carbon Company, Niagara Falls, N. Y.

**Past-President**

William G. Harvey, Aluminum Co. of America, Cleveland, Ohio.

**Vice-Presidents**

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G. W. Storey
L. D. Vorce
A. Kenneth Graham
Leon R. Westbrook
Stanislaus Skowronski

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L. C. Judson

**Treasurer**

Robert M. Burns, 463 West Street, New York City.

**Secretary**

Colin G. Fink, Columbia University, New York City.

## DIVISIONS OF THE SOCIETY

**Electrodeposition Division**

E. M. Baker, Chairman
S. Skowronski, Vice-Chairman
Gustaf Soderberg, Secretary-Treasurer

**Electronics Division**

J. W. Marden, Chairman
Ralph L. Seabury, Vice-Chairman
Marlin E. Fogle, Secretary-Treasurer

**Electrothermic Division**

P. H. Brace, Chairman
John D. Sullivan, Vice-Chairman
R. R. Ridgway, Secretary-Treasurer

**Theoretical Electrochemistry Division**

Malcolm Dole, Chairman
L. A. Matheson, Vice-Chairman
Arthur E. Lorch, Secretary-Treasurer